

REMARKS

Claims 23-50 and 54-71 are currently pending in this application. Original PCT claims 1-23 and amended PCT claims 1-22 were cancelled and claims 24-47 (renumbered as claims 23-46 by the Examiner) were added by a Preliminary Amendment. Claims 47-53 were added in a previous Amendment dated September 30, 2003. Claims 51-53 were cancelled and claims 54-71 were added in a previous Amendment dated August 30, 2004. This Amendment amends the specification and claims 23, 57, 62 and 64. Support to the amendments to the specification and the claims can be found in the specification, drawings and claims as originally filed. No new matter has been added.

The specification has been amended to include language that is consistent with the language recited in the claims.

The Examiner has rejected claims 64 and 65 under 35 U.S.C. § 103(a) for obviousness over British Published Patent Application No. GB 2,345,370 A to Tamburrini et al. (hereinafter "the Tamburrini reference") in view of U.S. Patent No. 5,504,316 to Bridgelall et al. (hereinafter "the Bridgelall patent"). The Examiner asserts that the Tamburrini reference teaches the claimed invention except for (1) a fixed mode scan pattern or a hand mode scan pattern cast through the standing front wall; (2) both scan patterns being cast through one in the same window 38 in the housing; and (3) a resilient holder arranged around at least part of the housing. The Examiner asserts that the Bridgelall patent teaches a fixed mode or a hand mode scan pattern being cast through one in the same window in the housing, and a resilient holder arranged around at least part of the housing. Therefore, the Examiner contends that it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to incorporate the teachings of the Bridgelall patent into the teachings of the Tamburrini reference in order to provide a more feasible, compact and accurate system. In response, claim 64 has been amended to specify that the removable protective resilient holder is arranged at least partially over each of said bottom side, top side, standing rear wall, standing front wall and standing side walls. Support for the amendment to claim 64 can be found, for example, in Fig. 2 and on page 9, lines 28-35 of the present specification. As discussed below in detail, none of the prior art references teaches or suggests a holder that covers (partially) each side of the housing.

The Tamburrini reference is directed to a barcode reading device that can operate in a fixed mode and a portable mode. The device includes a laser light source 550 for

transmitting a scanning beam 556 (page 21, lines 29-31), a rotatable mirrored polygon for reflecting laser light (Figs. 16-17 and page 21, lines 15-17), a number of fixedly disposed pattern mirrors for reflecting laser light (page 22, lines 1-2), a pick-up element for picking up the laser light scattered by a barcode (page 23, lines 8-12) and a compact housing (Figs. 1, 3-10, 13, 14 and 19). The housing has two distinct scan windows 104 and 108 (Fig. 1), one for the hand mode operation and another for the fixed mode operation, for casting two respective laser light scan patterns. Referring to Fig. 12, the device also comprises a fold mirror 273 which redirects laser light coming from a laser light source or a laser diode 255 onto the rotatable mirrored polygon or facet wheel 250 (page 16, lines 12-14). The Examiner concedes that the Tamburrini reference does not teach or suggest a resilient holder arranged around at least a part of the housing.

The Bridgelall patent is directed to a scanner that is operable in both portable (handheld) and surface mounted (hands free) modes for reading various types of indicia (column 1, lines 30-33). The scanner comprises a means for determining whether the operation is in a fixed or portable mode, and a means for adapting the scan pattern to an optimized pattern for such mode of operation (column 4, lines 25-30). The scanner 30 is housed in a light-weight plastic housing 40 and can be held in the palm of a user's hand (column 8, lines 39-43). The scanner 30 can also be mounted in a bracket 114 when operating in a fixed mode (Fig. 20A). Figs. 1B and 20A show the scanner 30 having one window, wherein both a fixed mode scan pattern and a handheld mode scan pattern are cast through. Fig. 20A also shows the scanner 30 having a rubber grip 110 around the crown of the scanner housing (i.e., top wall and side walls only). Therefore, the Bridgelall patent does not teach or suggest a resilient holder arranged at least partially around each or all of the walls of the housing as claimed in amended claim 64. Because claim 65 depends from amended claim 64, it is believed to be patentable over the Tamburrini reference and the Bridgelall patent and likewise in condition for allowance. Accordingly, withdrawal of the rejection and allowance of claims 64 and 65 are respectfully requested.

The Examiner has rejected claims 23, 24, 31, 32, 43, 46-49, 55-57 and 59-61 under 35 U.S.C. § 103(a) for obviousness over the Tamburrini reference as modified by the Bridgelall patent as applied to claim 64, and further in view of U.S. Patent No. 5,962,838 to Tamburrini (hereinafter "the '838 patent"). The Examiner asserts that the Tamburrini reference and the Bridgelall patent teach the claimed invention except for a control means

that switches the laser light source on or off such that, depending on the switching on and off, the laser light beam selectively falls on at least one of the number mirrors, thereby generating the hand mode scan pattern or the fixed mode scan pattern. The Examiner asserts that the '838 patent teaches a switching mechanism for switching the laser light source on or off such that the laser light beam selectively falls on at least one of mirror set 104a-f or 102a-f. Therefore, the Examiner contends that it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to incorporate a switching mechanism as taught by the '838 patent into the system of the Tamburrini reference and the Bridgelall patent in order to provide an advance system which does not require any mechanical movement of a pattern generated optics or scan mechanism to switch between scan patterns. In response, independent claims 23 and 57 have been amended to specify that each mirror is aligned side by side along a single substantially circumferential direction for reflecting the laser light beam. Support for the amended language can be found, for example, in Figs. 3-5 and on page 10, lines 19-25 of the present specification. As discussed below in more detail, none of the cited prior art references teaches or suggests that each of the mirrors can be aligned side by side along a single circumferential direction for reflecting the laser light beam, wherein the mirrors are used to generate both the fixed mode and hand mode scan patterns.

The Examiner agrees that the Tamburrini reference and the Bridgelall patent, which have been discussed above, fail to teach or suggest a control means that switches the laser light source on or off such that depending on the switching on or off, the laser light beam selectively falls on at least one of the number of mirrors, thereby generating the hand mode scan pattern or the fixed mode scan pattern.

The '838 patent discloses a barcode scanner with multiple modes of operation producing two or more distinct scan patterns, with each scan pattern optimized for different modes of operation with a manually actuated switching mechanism whereby the operator may readily select a desired scan pattern (Abstract). As shown in Figs. 1, 2, 4 and 5, a barcode scanner 100 having a manually switchable scan pattern includes a first scan pattern generating mirror set 102a-f, a second scan pattern generating mirror set 104a-f (Fig. 1B), a rotating facet wheel scan mechanism 106, and a light source shown as laser diode 108 (column 3, line 64 to column 4, line 3). A switching mechanism may be employed to switch between (A) pattern generating mirror set 102 with the operating position A shown in Fig. 2, and (B) pattern generating mirror set 104 with the operating position B shown in Fig. 5. In

the first operating position A, pattern generating mirror set 102 may produce a scan pattern 300 as shown in Fig. 3. When switching to the second operating position B, pattern generating mirror set 104 produces scan pattern 600 as shown in Fig. 6 (column 4, lines 14-23). According to Fig. 1A, mirror facets 106a and 106c are angled to direct the beam 107 only onto mirror set 102a-f to produce the (A) pattern and, mirror facets 106b and 106d are angled to direct the beam 107 only onto mirror set 104a-f to produce the (B) pattern as shown in Fig. 1B (column 5, lines 12-19). The '838 patent discloses two distinct sets of mirrors, wherein mirrors 102a-f are aligned side by side along a first circumferential direction, and mirrors 104a-f are also aligned side by side along a second circumferential direction, such that both mirror sets 102a-f and 104a-f are used to generate two different scan patterns, respectively. Therefore, this scanner includes two mirror sets having mirrors aligned along two different circumferential directions. The '838 patent does not teach or suggest each of the mirrors in the entire mirror set (i.e., 102a-f and 104a-f) aligned side by side along a single substantially circumferential direction for reflecting a laser light beam.

Because none of the prior art of record teaches or suggests a number of mirrors disposed in stationary operating positions, wherein each mirror is aligned side by side along a single substantially circumferential direction as claimed in amended independent claims 23 and 57, withdrawal of rejection and allowance of claims 23, 24, 31, 32, 43, 46-49, 55-57 and 59-61 are respectfully requested.

The Examiner has rejected claims 25-28, 33, 34, 44, 50, 54, 62 and 63 under 35 U.S.C. § 103(a) for obviousness over the Tamburrini reference as modified by the Bridgelall patent and the '838 patent as applied to claim 23, and further in view of U.S. Patent No. 5,010,242 to Frontino. The Examiner asserts that the Tamburrini reference, the Bridgelall patent and the '838 patent teach the claimed invention except for a mirror that is foldable between two operative positions; in the first position of which a substantially flat mirror surface of the mirror reflects a laser light incident thereon and, in the second position of which a substantially concave rear mirror surface reflects a laser light incident thereon. The Examiner asserts that the Frontino patent teaches a folding mirror 26 foldable around a shaft 28, wherein the foldable mirror 26 has a flat surface and a concave surface and, wherein the shaft 28 rotates the mirror 26 from a first position of which the light beam is reflected by the flat surface to the second position at which a light beam is reflected by the concave surface. Therefore, the Examiner contends that it would have been obvious to an artisan of

ordinary skill in the art at the time the invention was made to incorporate a foldable mirror as taught by Frontino into the teachings of the Tamburrini reference, the Bridgelall patent and the '838 patent in order to enhance a deflective capability of the scanner system and to provide a more feasible and compact system. Applicants respectfully disagree with the Examiner's assertions.

The Examiner agrees that the Tamburrini reference, the Bridgelall patent and the '838 patent, which have been discussed above, fail to teach or suggest a foldable mirror, wherein a substantially flat mirror surface of the mirror reflects a laser light incident thereon when in a first position and, a substantially concave rear mirror surface reflects a laser light incident thereon when in a second position.

The Frontino patent discloses a barcode scanner 10 for scanning a barcode at a variable scanning velocity. The scanner 10 includes a laser light source 22 capable of generating a collimated light beam 24, a mirror 26 and a receiving means 34. The mirror 26 having a concave face and containing a reflecting flat portion is mounted to a shaft 28 rotatably driven by a motor 30. Rotation of the shaft 26 in a back and forth direction causes the flat portion of mirror 26 to rotate back and forth and to deflect light beam 24 across the surface of the barcode 20. At least a portion of light beam 24 is reflected back from the barcode 20 to the concave surface of mirror 26 which focuses and reflects this reflected light to the optical signal receiving means 34 (column 4, lines 35-52). In other words, the flat portion of the mirror 26 is used for scanning the emitted light beam 24 onto the barcode, and the concave portion, which is on the same surface as the flat portion is used for collecting the light beam returning from the barcode and focusing it onto the receiving means 34. Therefore, mirror 26 does not have both a front mirror surface that reflects laser light and a concave rear mirror surface as claimed in independent claim 33. Furthermore, this type of mirror configuration of the Frontino patent is typical of retro-reflective laser scanning systems in which the mirror must continuously move back and forth both to scan the light beam and to collect the reflected light coming from the barcode while in operation. Because mirror 26 is continuously moving while in operation, there is no stationary operative position in the Frontino patent as claimed in independent claims 23 and 62.

In view of the above, there is no teaching, suggestion or motivation in either of the cited prior art references to provide a mirror that is foldable between two stationary operative positions and reflects light on both a front surface and a rear surface of the mirror.

Because dependent claims 25-28, 34, 44, 50, 54 and 63 depend either directly or indirectly from independent claims 23, 33 or 62, they are believed to be patentable over the cited prior art for the reasons discussed above. Furthermore, claim 62 has also been amended to include the same limitations as in amended claim 23 (i.e., each mirror is aligned side by side along a single substantially circumferential direction) and, therefore, claims 62 and 63 are also believed to be allowable over the prior art of record for the same reasons as discussed above in connection with amended independent claim 23. Accordingly, withdrawal of the rejection and allowance of claims 25-28, 50, 54, 62 and 63 are respectfully requested.

The Examiner has rejected claims 29 and 30 under 35 U.S.C. § 103(a) for obviousness over the Tamburrini reference as modified by the Bridgelall patent and the '838 patent and further in view of U. S. Patent No. 4,958,894 to Khowles. The Examiner cites the Khowles patent for the teaching of a coil in a bumper, wherein the coil serves as a means for oscillating the mirror about an axis, and the bumper serves as a blocking means for keeping the mirror in position. Because claims 29 and 30 depend either directly or indirectly from amended independent claim 23, they are believed to be allowable for the same reasons as discussed above in connection with amended independent claim 23.

The Examiner has rejected claims 35, 36, 38-42, 45 and 66 under 35 U.S.C. § 103(a) for obviousness over the Tamburrini reference in view of U. S. Patent No. 5,175,421 to Harris (hereinafter "the Harris patent") for the reasons discussed in Item 8, pages 7 and 8 of the Office Action. The Examiner asserts that the Tamburrini reference discloses a plurality of flat mirror surfaces [564-566, 580-583] defining a lateral surface which is closed around an axis of rotation of the polygonal mirror and a scan engine 560, which serves as a drive means for driving a rotating support member. The Examiner asserts that the Tamburrini reference fails to teach that the polygonal mirror is placed with the outer ends thereof on the rotating support member. The Examiner combines the Tamburrini reference with the Harris patent for the asserted teaching of a deflector assembly 52 which includes a polygonal mirror having its outer ends placed on a rotating support member. Therefore, the Examiner contends that it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to incorporate the teachings of the Harris patent into the system as taught by the Tamburrini reference in order to provide for a better arrangement of the components within the apparatus. As discussed below in detail, Applicants respectfully disagree with the Examiner's assertions.

In the previous Amendment dated August 30, 2004, independent claim 35 had been amended to include the limitation that the rotatable polygonal mirror “comprises a plurality of flat mirror surfaces defining a lateral surface which is closed around an axis of rotation of said polygonal mirror.” In view of the amendment to claim 35 and the arguments from the previous Amendment which are recited below, Applicants believe that claims 35, 36, 38-42, 45 and 66 are distinguishable over the Tamburrini reference and the Harris patent.

The Tamburrini reference, which has been discussed above, discloses a scan engine 560 that includes a number of pattern mirrors 564-566 and 580-583 that are arranged partially around a facet wheel 558 (i.e., rotatable polygonal mirror) as shown in Fig. 16. The facet wheel 558 includes two or more mirror facets set at two or more different angles. As the wheel 558 rotates, scanning beam 556 reflected from any one facet mirror may be sequentially swept across one or more of the pattern mirrors 564-566 and 580-583 (page 21, lines 34 to page 22, line 2). The pattern mirrors 564-566 and 580-583, which can be arranged on either side of the facet wheel 558, are not part of the rotating facet wheel 558 (shown in Figs. 16 and 17) and, therefore, these mirrors do not define a lateral surface that is closed around an axis of rotation of the facet wheel nor do they rotate with the facet wheel 558. The mirror facets (page. 21, lines 34-36), which can be set at two or more different angles on the facet wheel 558, also do not define a lateral surface that is closed around an axis of rotation of the facet wheel 558. Therefore, none of the pattern mirrors 564-566 and 580-583 or the mirror facets of the Tamburrini reference teaches or suggests a plurality of flat mirror surfaces defining a lateral surface which is closed around an axis of rotation of the rotatable polygonal mirror.

The Harris patent is directed to an optical code scanner that uses an asymmetrical deflector, which deflects a scanner beam along different paths within the scanner. The asymmetrical deflector includes a disk or support member 55 and a plurality of deflecting members 62, 60, 58 and 56 mounted around a portion of the periphery of the support member 55. The support member 55 and the deflecting members are mounted via opening 61 to a shaft 63 of drive motor 19 (Figs. 3 and 4 and column 4, lines 17-27). Each one of the deflecting members 62, 60, 58 and 56 comprises a front mirror and back mirror which reflect the beam from two different deflection points, thereby generating different path lengths for the beam (Figs. 3 and 4 and column 4, lines 39-62). As discussed below, the Harris patent does not teach or suggest a polygonal mirror comprising a plurality of flat

mirror surfaces defining a lateral surface which is closed around an axis of rotation, or a polygonal mirror having its outer ends placed on a rotating support member as claimed in independent claim 35.

According to Webster's New College Dictionary, a polygon is defined as a closed plane figure bounded by three or more line segments. The Harris patent does not disclose a polygonal mirror, but discloses a plurality of mirror segments mounted on a rotating support member. Because Harris does not disclose a polygonal mirror, it does not have outer ends to place on a support member. Even if the Examiner were to consider the rotating mirror segments of the Harris patent as a polygon, these mirror segments do not define a lateral surface that is closed around an axis of rotation as claimed in claim 35. In view of the previous amendment to independent claim 35, the Tamburrini reference and the Harris patent, either alone or in combination, do not teach or suggest a polygonal mirror comprising a plurality of flat mirror surfaces defining a lateral surface which is closed around an axis of rotation. Therefore, claim 35 is believed to be distinguishable over these references. Because the claims 36, 38-42, 45 and 66 depend either directly or indirectly from independent claim 35, they are believed to be distinguishable over the Tamburrini reference and the Harris patent for the reasons discussed above. In view of the above, withdrawal of the rejection and allowance of claims 35, 36, 38-42, 45 and 66 are respectfully requested.

The Examiner has rejected claim 37 under 35 U.S.C. § 103(a) for obviousness over the Tamburrini reference as modified by the Harris patent and further in view of U. S. Patent No. 5,629,510 to Quinn et al. (hereinafter "the Quinn patent"). Because claim 37 depends from independent claim 35, claim 37 is believed to be allowable for the same reasons discussed above in connection with claim 35.

The Examiner has rejected claims 67-71 under 35 U.S.C. § 103(a) for obviousness over the Tamburrini reference as modified by Harris and further in view of the '838 patent. Claims 67-71 depend either directly or indirectly from independent claim 35 and, therefore, claims 67-71 are believed to be patentable over the prior art for the same reasons discussed above in connection with claim 35.

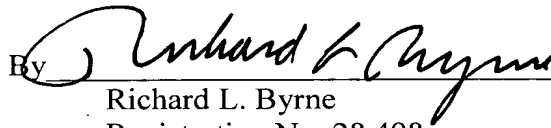
Application No. 09/787,093
Paper Dated: April 4, 2005
In Reply to USPTO Correspondence of October 5, 2004
Attorney Docket No. 702-010383

CONCLUSION

In view of the above amendments to claims 23, 57, 62 and 64 and the above remarks, withdrawal of the rejection of the claims and allowance of claims 23-50 and 54-71 are respectfully requested.

Respectfully submitted,

WEBB ZIESENHEIM LOGSDON
ORKIN & HANSON, P.C.

By 

Richard L. Byrne
Registration No. 28,498
Attorney for Applicants
700 Koppers Building
436 Seventh Avenue
Pittsburgh, PA 15219-1818
Telephone: 412-471-8815
Facsimile: 412-471-4094
E-mail: webblaw@webblaw.com